ITEM 5 c. UPDATED
RETROACTIVE STORM WATER
CERTIFICATE AS REQUIRED BY
MC SANITARIAN

Land Use Planning Division
1600 SE 190th Ave.
Portland OR 97233
Phone: 503-988-3043
land.use.planning@multco.us
https://multco.us/landuse/

STORMWATER DRAINAGE CONTROL CERTIFICATE
>500 SQUARE FEET OF NEW / REPLACED IMPERVIOUS SURFACES

NOTE TO PROPERTY OWNER/APPLICANT: Please have an Oregon Licensed Professional Engineer fill out this Certificate and attach a signed site plan, stamped and signed storm water system details, and stamped and signed storm water calculations used to support the conclusion. Please note that replacement of existing structures does not provide a credit to the square footage threshold.

Property Address or Legal Description: 23414 NW Moreland Rd
North Plains, OR 97133

Description of Project: Project is the construction of a new storage building (See A5.0). Seeking the following:
1. Significant Environmental Concern (Type 2) permit for a new 2.375 SF accessory storage building and retro-active permit for an existing 880 SF water well ag building (See A101).
2. Accessory Use Determination (total area of accessory building exceeds 2,500 SF)
3. Geologic Hazard exemption

The following stormwater drainage control system will be required:

- [x] **Use of Gutter, downspout, and splash block drainage control system;**
- [x] **Natural Infiltration Process; or**
- [ ] **Construction of an on-site storm water drainage control system.**

The rate of stormwater runoff attributed to the new/replaced development for a 10-year/24-hour storm event will be no greater than that which existed prior to any development as measured from the property line or from the point of discharge into a water body with the use of the designated system [MCC 39.6235].

I certify the attached signed site plan showing the areas needed for the chosen system type, stamped and signed storm water system design details, and stamped and signed calculations dated 6/9/2021 **will meet the requirements listed above.**

Signature: _____

Print Name: CONNOR LAMB

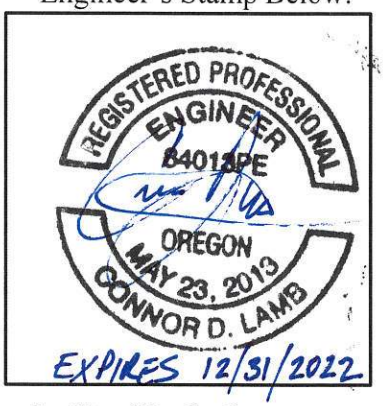
Business Name: _____

Address: 18829 NW LOGIE TRAIL, RD.

Phone #: (360)977-8056

Date: 6/9/2021

Engineer's Stamp Below:



NOTE TO ENGINEER: Please check one box above. Multnomah County does not use the City of Portland's storm water ordinance. As part of your review, MCC 39.6235 requires that you must consider all new, replaced, and existing structures and impervious areas and determine that the newly generated stormwater from the new or replaced impervious surfaces is in compliance with Multnomah County Code for a 10-year/24-hour storm event. This Storm Water Drainage Control Certificate does not apply to shingle or roof replacement on lawfully established structures.

§ 39.6235 STORMWATER DRAINAGE CONTROL.

(A) Persons creating new or replacing existing impervious surfaces exceeding 500 square feet shall install a stormwater drainage system as provided in this section. This subsection (A) does not apply to shingle or roof replacement on lawful structures.

(B) The provisions of this section are in addition to and not in lieu of any other provision of the code regulating stormwater or its drainage and other impacts and effects, including but not limited to regulation thereof in the SEC overlay.

(C) The provisions of this section are in addition to and not in lieu of stormwater and drainage requirements in the Multnomah County Road Rules and Design and Construction Manual, including those requirements relating to impervious surfaces and proposals to discharge stormwater onto a county right-of-way.

(D) The stormwater drainage system required in subsection (A) shall be designed to ensure that the rate of runoff for the 10-year 24-hour storm event is no greater than that which existed prior to development at the property line or point of discharge into a water body.

(E) At a minimum, to establish satisfaction of the standards in this section and all other applicable stormwater-related regulations in this code, the following information must be provided to the planning director:

(1) A site plan drawn to scale, showing the property line locations, ground topography (contours), boundaries of all ground disturbing activities, roads and driveways, existing and proposed structures and buildings, existing and proposed sanitary tank and drainfields (primary and reserve), location of stormwater disposal, trees and vegetation proposed for both removal and planting and an outline of wooded areas, water bodies and existing drywells;

(2) Documentation establishing approval of any new stormwater surcharges to a sanitary drainfield by the City of Portland Sanitarian and/or any other agency authorized to review waste disposal systems;

(3) Certified statement, and supporting information and documentation, by an Oregon licensed Professional Engineer that the proposed or existing stormwater drainage system satisfies all standards set forth in this section and all other stormwater drainage system standards in this code; and

(4) Any other report, information, plan, certification or documentation necessary to establish satisfaction of all standards set forth in this section and all other applicable stormwater-related regulations in this code, such as, but not limited to, analyses and explanations of soil characteristics, engineering solutions, and proposed stream and upland environmental protection measures.

23414 NW MORELAND RD. NORTH PLAINS, OR 97133 6/9/2021

Δ Q OF STORMWATER ATTRIBUTED TO THE NEW DEVELOPMENT USING A SENSITIVITY ANALYSIS WITH THE RATIONAL METHOD

SHED FOOTPRINT = 1240 ft² = 0.028 ACRES

RUNOFF COEFFICIENTS FOR THE RATIONAL METHOD (ODOT HYDRAULICS MANUAL)

HOUSE = FINISHED SECOND + ATT GAR + GR HOUSE
3223 ft² + 1142 ft² + 128 ft² = 4493 ft² = 0.10 ACRES
CONCRETE PAVEMENT = 1600 ft² = 0.04 ACRES
BRICK PAVING = 6000 ft² = 0.14 ACRES
OTHER IMPERVIOUS = DECK + COV PATIO + POOL
SHED = 140 ft² + 400 ft² + 800 ft² = 1340 ft² = 0.03 AC
DRIVEWAY (GRAVEL) = 10,000 ft² = 0.23 ACRES

$$T_{osf} = \frac{0.93(L^{0.6} n^{0.6})}{(i^{0.4} S^{0.3})}$$

T_{osf} = TRAVEL TIME FOR OVERLAND SHEET FLOW SEGMENT (MIN.)
L = LENGTH OF FLOW = 300 ft
n = MANNING'S ROUGHNESS COEFFICIENT = 0.4 (WOODLAND & FORESTS)
i = RAINFALL INTENSITY (in/hr) = FROM GRAPH
S = AVERAGE SLOPE = 10% = 0.10

ASSUME ~~T_c = 30 MIN~~ IDR ZONE 8 (ODOT TABLE ATTACHED)

~~$T_c = \frac{0.93(300^{0.6} \cdot 0.04^{0.6})}{(1.02^{0.4} \cdot 0.10^{0.3})}$~~ ~~$n = 0.150$~~ ~~$i = 1.02$~~

USE EXCEL TABLE FOR T_c (ITERATIVE PROCESS) ATTACHED

START WITH $T_c = 31$

$i = 1.0$

$T_{c(calc)} = 32.8$

2ND ITERATION USE 33

$T_c = 33$

$i = 0.96$

$T_{c(calc)} = 33.3$

SEE CALC SHEET

		C	AREA (SF)	AREA (AC)	
Existing Surfaces	House		4493	0.10	
	Concrete Pavement		1600	0.04	
	Other Impervious		1340	0.03	
	Total Pavement & Roofs	0.90	**7433**	**0.17**	0.15
	Brick Pavers		6000	0.14	
	Total Drives & Walks	0.80	**6000**	**0.14**	0.11
	Gravel Drive Around Shed		10000	0.23	
	Total Gravel Pavement	0.85	**10000**	**0.23**	0.20
	Vineyard		93640	2.15	
	Total Cultivated Land, Clay & Loam	0.55	**93640**	**2.15**	1.18
	Unimproved Forest Area (>10% slopes)			40.01	
	Total Woodland & Forests	0.20	NA	**40.01**	8.00
	Total Existing			42.70	9.64
New	Tractor Parking and Well Shed	0.90	**1240**	**0.03**	0.03
				42.70	**9.66**
			C(exist)	0.23	
			C(new)	0.23	

Assume $T_c = 31$, $i = 1.0$	
L	300
n	0.4
i	1
S	0.1
T_{calc} =	32.8089

Assume $T_c = 33$, $i = 0.96$	
L	300
n	0.4
i	0.96
S	0.1
T_{calc} =	33.34903

$Q_{existing}$	C_f	C_{ex}	i	A
9.4	1	0.23	0.96	42.70

Q_{New}	C_f	C_{New}	i	A
9.4	1	0.23	0.96	42.70

Using the rational method to find the peak flow rate for the existing condition and the new condition shows that $Q_{existing} = Q_{new}$. Therefore, the rate of stormwater runoff attributed to the *Tractor Parking and Well Shed* was shown to be no greater than that which existed prior. Conservative values including a shortened flow length and Runoff Coefficients (C values) were used.

Downspout extensions, splash blocks, and/or other flow dispusion methods to overland infiltration on the property should be used.

Note: Single family residential roof drains are exempted from the Oregon UIC program.

Projects are excluded from application of Oregon's water quantity performance standard when the uncontrolled peak post-construction runoff rate from the net new impervious surface area is less than 0.5 cubic feet per second during the 10-year, 24-hour storm event from the total proposed contributing area.

For example, in the Zone 8 (Project Location) 0.5 cfs is generated from a proposed development area of approximately 0.24 acre. In this case, using the ODOT Hydraulics Manual (Chapter 7), for Zone 8 the rainfall intensity for a 10-year storm is 2.3 inches/hour. For an area of 0.24 acre, assuming a 5-minute time of concentration and a runoff coefficient of 0.90 for impervious surface, using the Rational Method yields a peak flow rate of 0.49 cubic feet per second. This project impervious area results in 0.03 acres which is less than 0.24 acres; therefore yielding much less than 0.5 cubic feet per second.

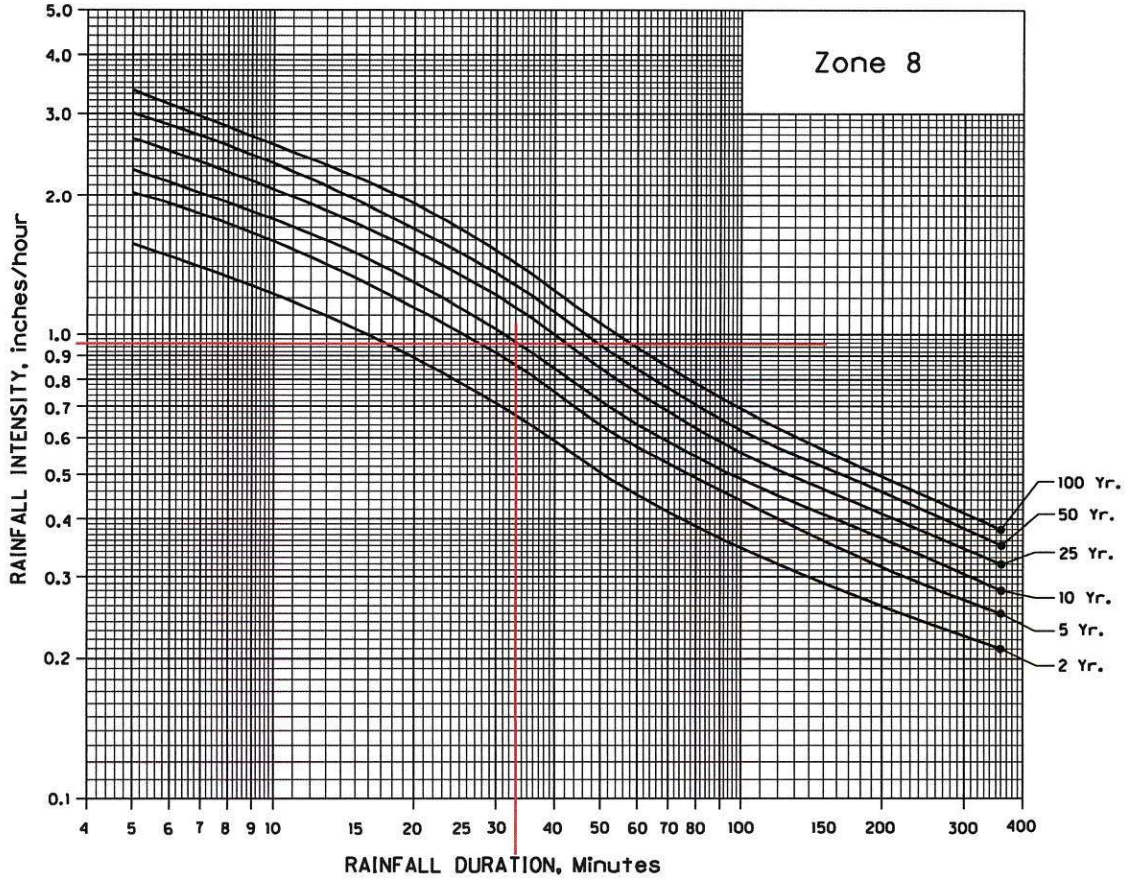
Table 1 Runoff Coefficients for the Rational Method

	FLAT	ROLLING	HILLY
Pavement & Roofs	**0.90**	**0.90**	**0.90**
Earth Shoulders	0.50	0.50	0.50
Drives & Walks	0.75	0.80	**0.85**
Gravel Pavement	**0.85**	**0.85**	**0.85**
City Business Areas	0.80	**0.85**	**0.85**
Apartment Dwelling Areas	0.50	0.60	0.70
Light Residential: 1 to 3 units/acre	0.35	0.40	0.45
Normal Residential: 3 to 6 units/acre	0.50	0.55	0.60
Dense Residential: 6 to 15 units/acre	0.70	0.75	0.80
Lawns	0.17	0.22	0.35
Grass Shoulders	0.25	0.25	0.25
Side Slopes, Earth	0.60	0.60	0.60
Side Slopes, Turf	0.30	0.30	0.30
Median Areas, Turf	0.25	0.30	0.30
Cultivated Land, Clay & Loam	0.50	0.55	0.60
Cultivated Land, Sand & Gravel	0.25	0.30	0.35
Industrial Areas, Light	0.50	0.70	0.80
Industrial Areas, Heavy	0.60	0.80	**0.90**
Parks & Cemeteries	0.10	0.15	0.25
Playgrounds	0.20	0.25	0.30
Woodland & Forests	0.10	0.15	0.20
Meadows & Pasture Land	0.25	0.30	0.35
Unimproved Areas	0.10	0.20	0.30

Note:

- ***Impervious surfaces in bold***
- *Rolling = ground slope between 2 percent to 10 percent*
- *Hilly = ground slope greater than 10 percent*

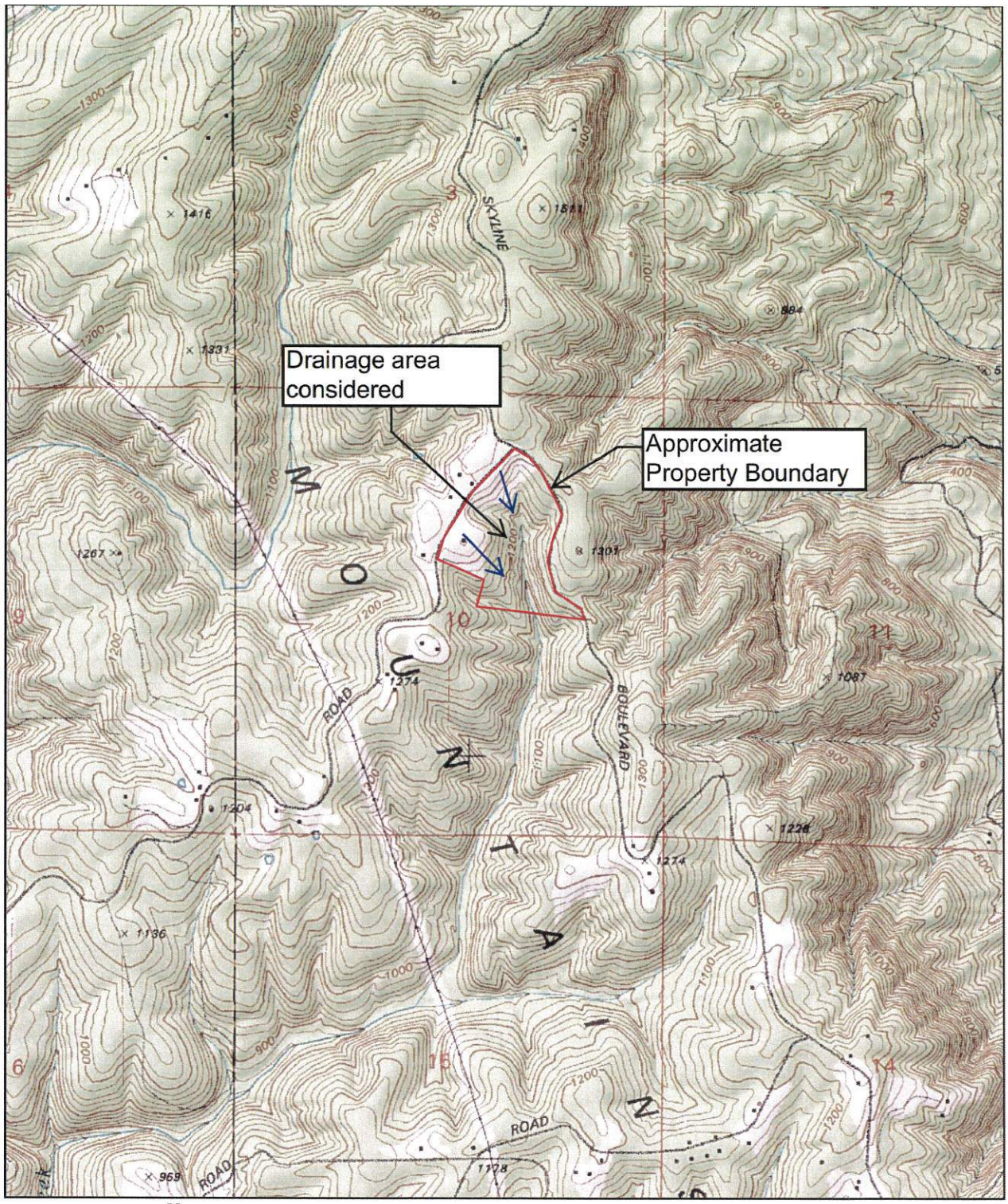
RAINFALL INTENSITY - DURATION - RECURRENCE INTERVAL CURVES



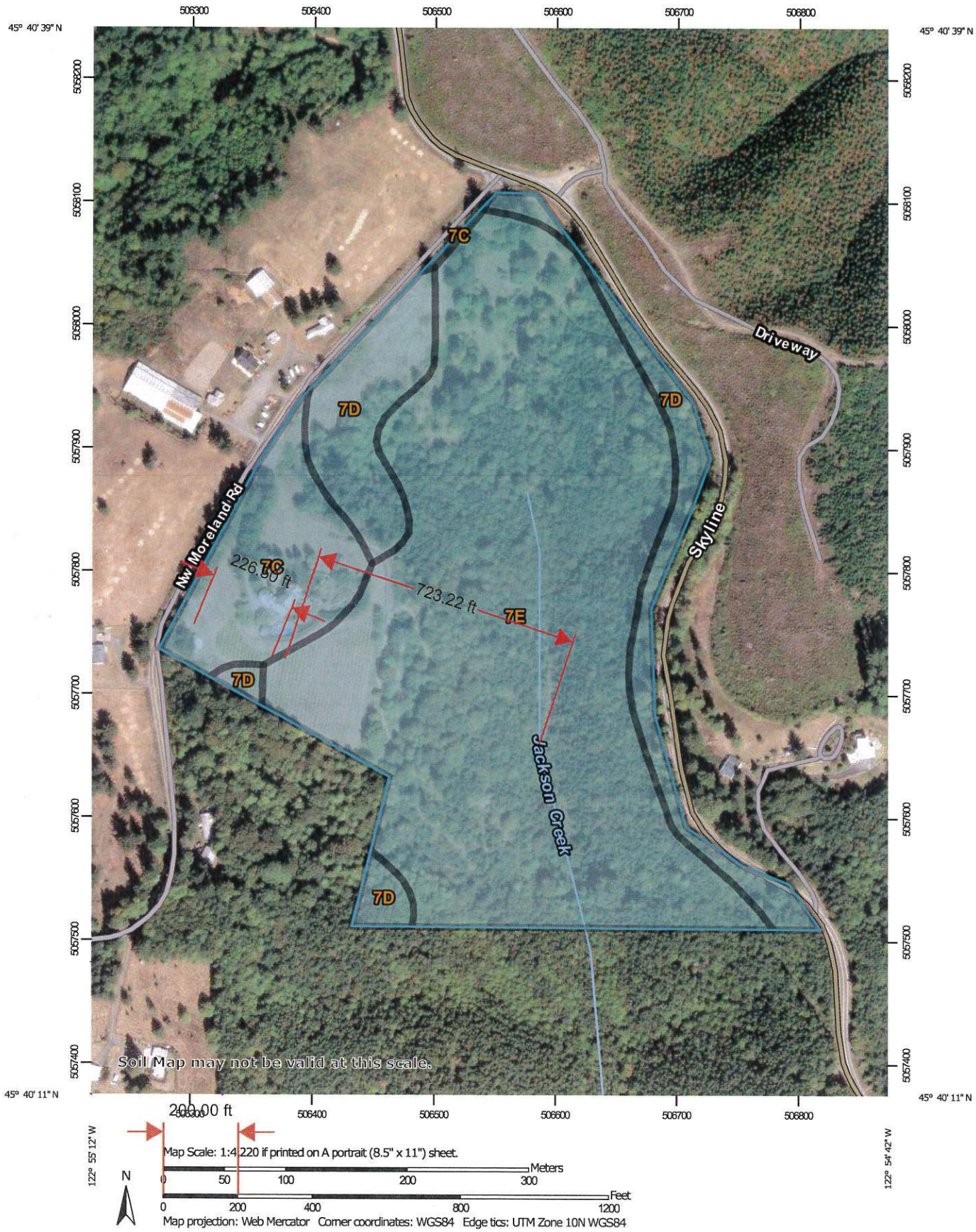
Segment Number	Segment Type	Class	Area Sq Ft
1	MAIN	7N	2940
2	FIN SECOND	7N	3223
3	FIN BSMT	7N	2064
4	UNF BSMT	7N	728
5	UNF BSMT	7N	1350
6	ATT GAR	7N	1142
7	GR HOUSE	7N	128
8	CONCRETE	7N	1600
9	BRICK PAV	7N	6000
10	DECK	7N	140
11	COV PATIO	7N	400
12	POOL	7N	800

Ass

Special
$0.00


Drainage area considered
Approximate Property Boundary
SKYLINE
ROAD
BOULEVARD
ROAD
ROAD
1416
1331
1267
1304
1136
969
1274
1301
1274
1087
1228
1178
N
0
0.5 Mi
0
3000 Ft
Map provided by MyTopo.com

Hydrologic Soil Group—Multnomah County Area, Oregon



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Multnomah County Area, Oregon
Survey Area Data: Version 16, Sep 17, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 29, 2015—Sep 13, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
7C	Cascade silt loam, 8 to 15 percent slopes	C	4.8	10.9%
7D	Cascade silt loam, 15 to 30 percent slopes	C	7.0	16.2%
7E	Cascade silt loam, 30 to 60 percent slopes	C	31.8	72.9%
Totals for Area of Interest			**43.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher